

Connecticut Technical Assistance Program—Pollution Prevention Pays

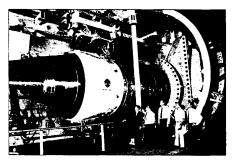
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New group hits the ground running Manufacturers drawn to pollution prevention forum

Representatives from over a dozen manufacturing companies attended the first meeting of the Connecticut Business Pollution Prevention Roundtable (CTBPPR) in Hartford on May 30, 1996. The participants had come to discuss the creation of a business group that would primarily focus on issues relating to pollution prevention and source reduction.

In attendance at the two-hour meeting were representatives from the aircraft, metal finishing, electronics. defense. power, food processing, consumer, and rubber goods industries. Following introductory remarks by ConnTAP's Rita Lomasney, the participants turned the proceedings



On a recent tour of Pratt & Whitney, CTBPPR members visited a jet engine test cell. The PVV4084 engine, shown here, was built for the new Boeing 777.

into a lively discussion about the needs of the manufacturing community in Connecticut and the possible role that CTBPPR could play.

Participants identified several key areas in which CTBPPR could be of great assistance to state manufacturers. There was a consensus among participants that more practical information about pollution prevention

and other alternatives to traditional environmental protection approaches were needed. Suggestions for the group included the preparation of local industry case studies. sponsorship of conferences and seminars, involvement in pilot and demonstration projects and the creation of an on-line home page.

Participants hoped that CTBPPR could develop into a group that small companies could rely on when they felt frustrated by contradictory or confusing information they received from vendors and others. Several participants thought that CTBPPR's focus should be on improving business-to-business communication and on sharing information: about pollution prevention technologies and techniques.

Eric Brown of the Connecticut Business and Industry Association (CBIA) said that he felt confident the group would find a niche for itself

Please see Roundtable on page 3

Sept. 12.1996 (Thurs.) -10:30 a.m. to 4:00 p.m.

CT Business Pollution Prevention Roundtable

Pratt & Whitney. Middletown CT
The Roundtable's third meeting will feature a tour of Pratt & Whitney's Middletown manufacturing complex and a meeting on the Roundtable's mission statement and goals. For more information about the tour, meeting, or the Roundtable, please contact Barbara Barbieriat ConnTAP at (860) 241-0777.

Sept. 24.1996 (Tues.) -8:30 a.m. to 11:30 a.m. Hartford Marriott Hotel, Farmington CT, or October 9, 1996 (Wed.) -9:30 a.m. to 12:30 p.m. Norwalk Maritime Center. Norwalk CT

Underground Storage Tank Rules: Planning for New Requirements in 1998

This half-day seminar sponsored by the Connecticut Business and Industry Association's (CBIA) Environmental Policies Council will explain the latest regulations concerning underground storage tanks and what should be done to prepare for the significant changes that become effective in 1998. The seminar is being offered on two dates at different locations. Registration for both dates will begin one half hour before the listed times. For more information. please call Cindy Panioto at CBIA at (860') 244-1900.

October 29,1996 (Tues.) -9:00 a.m. to 4:00 p.m.

11th Annual Conference on Pollution Prevention

Four Points Hotel, Waterbury CT

A one-day conference featuring some of the latest technology and pollution prevention techniques for the metal finishing and electroplating industries. In addition to informative seminars and panel discussions, new services and equipment will be available for review and demonstration. The cost of the conference is \$65.00 per person. Exhibit space is available at a cost of \$205 for Connecticut Association of Metal Finishers (CAMF) members and \$250 for others. Event sponsors include: the CAMF, the Connecticut Department of Environmental Protection. ConnTAP, the Environmental Research Institute at UConn, and the American Electroplates & Surface Finishers Society. For more information, please call Jean Cronin at the CAMF at (203) 272-9955.

November 8, 1996 (Fri.)

Connecticut Environmental Law Course

Hartford Marriott. Rocky Hill CT

Government Institutes (GI) of Rockville MD is offering a short course on Connecticut environmental law. The course is designed to provide timely information to insure that companies operate within the state's environmental compliance guidelines. The course cost is \$399.00. For information, call GI at (301) 921-2345.

CT company receives DOE grant

The Whyco Chromium Company of Thomaston was the recent recipient of a \$390.000 NICE³ grant to demonstrate and commercialize a new, highly efficient electro-plating barrel. The new barrel is reported to reduce energy consumption, raw material inputs. heat input. rinse water use, inhouse waste treatment costs and the amount of waste requiring disposal.

NICE³ (National Industrial Competitiveness through Energy Environment Economics) is a U.S. Department of Energy (DOE') program that provides grants of up to \$400,000 to demonstrate innovative pollution prevention technologies. To be eligible, projects must save energy, reduce waste and reduce costs. Specific industry sectors have been targeted for this program including aluminum, chemicals, glass, metal casting, and steel. For more information about the NICE³ program, contact Lynn Stoddard of the CT DEP Office of Pollution Prevention at (860) 424-3236.

Pollution Prevention Week

In August. Governor John Rowland signed a proclamation declaring September 16-22 Pollution Prevention Week in Connecticut. It is also National Pollution Prevention Week during which companies, communities and organizations around the country are being asked to highlight the importance of pollution prevention (P2). Among the activities recommended by the National Pollution Prevention Roundtable (NPPR) are: presenting awards for leadership in P2. holding discussion forums or seminars on P2. promoting P2 through local media, and providing teachers with P2 curricula.

If you would like more information about Pollution Prevention Week, call Michele Russo at the NPPR at (202) 466-P2P2. If you are planning any activities for Pollution Prevention Week that you would like to see reported in the ConnTAP Quarterly, or, to receive a free P2 Week poster, call Barbara Barbieri at ConnTAP at (860) 241-0777.

ABOUT ConnTAP

ConnTAP *Quarterly* is published by ConnTAP, the Connecticut Technical Assistance Program, which offers **free**, **nonregulatory** pollution prevention assistance to businesses and industry in the state. Free subscriptions to this newsletter are available by calling ConnTAP at (860) 241-0777.

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Roundtable, continued from page 1

alongside existing groups. Dan Martin of Chromium Process Company agreed, adding that it would be counter-productive to target areas that groups like CBIA's Environmental Policies Council and the Connecticut Association of Metal Finishers were already involved in.

While recognizing the importance of providing technical information, Carol Violette of the Delta Rubber Company said that the CTBPPR should also stress the message that pollution prevention can make good economic sense for industry. Rick Larsen of Northeast Utilities spoke of the need to change attitudes and the recent surrender of the command-and-control ~ppr-each to regulations emerging from Carol Browner's EPA.

Tom Ieronimo of Integrated Environmental Resources delivered a technical presentation on water and chemical audits near the close of the meeting. Afterwards, participants agreed to meet again to resolve several outstanding issues. ConnTAP manager, Rita Lomasney, who had organized the meeting, was pleased with the results. "I'm very encouraged by the enthusiastic turnout and with many of the ideas that I heard today," she said. "We had great attendance from a cross-section of companies from around the state and a good mix of large and small firms."

John Zavodjancik hosted CTBPPR's next meeting at Pratt & Whitney on July 11. Before the meeting, John arranged for CTBPPR members to tour the laboratory, test. assembly and chemical processing areas of the East Hartford facility. Following the tour, members held a session where they discussed waste reduction and water conservation projects that they were involved with. Jim Pease of Chesebrough Ponds spoke in some detail about his company's recent efforts to reduce waste and improve efficiency at plants throughout the U.S. and in Puerto Rico. Chris McNeil discussed the reorganization of a manufacturing cell at Pratt & Whitney's Middletown facility, and Gregg Gabinelle recounted how a water audit resulted in process changes and considerable savings at U.S. Surgical.

Paul Safin of Frito-Lay noted how interesting he found it to meet with engineers and managers from a variety of industries to discuss problems, compare notes and observe different processes. Other attendees also commented positively on the diverse mix of industries involved.

In the afternoon. CTBPPR members met to discuss group goals and develop a mission statement. While there was broad agreement about the ways the group could support industry, participants agreed to meet again to resolve issues relating to the language of the mission statement and the formal structure of the group. The CTBPPR's next meeting has been scheduled for Thursday. September 12 at Pratt & Whitney in Middletown. The agenda for the meeting will include a facility tour, a demonstration of Pratt's computerized system for managing environmental information, and a mission statement workgroup session.

For more information on the next workgroup meeting, to be included on the CTBPPR mailing list, or to take part in the Pratt & Whitney tour, please call Barbara Barbieri at ConnTAP at (860) 241-0777.

CYRO Industries recognized for accomplishments Site Visit Program invited to evaluate opportunities for further reductions

CYRO Industries employs over 100 people at its plant in Wallingford where it produces modified acrylic resins used in a variety of consumer and industrial goods. The company traces its roots in the tires back to the American Cyanamid Company. Today, it is jointly owned by Cytec Industries and a German company.

CYRO management has given a high priority to reducing and eliminating waste generation. In 1990, the company established goals for reducing waste at the plant by 90 percent between 1991 and 1995. A further 60 percent reduction is planned by the year 2000. The company's efforts have resulted in their recent selection for the P-4 Project, a model Title V permit program, by EPA-New England and the CT DEP. Under this program, CYRO will incorporate pollution prevention into its air emissions permit and will gain flexibility to make process improvements since, presumably, it will not have to obtain regulatory approval before every modification.

CYRO Industries maintains staff dedicated to ensuring full environmental compliance and pursuing reductions in waste generation. This group, s efforts have paid off in considerable reductions in odors and hazardous waste over the past few years. Similarly, water usage has been decreased from about 400 gallons per minute in 1993 to less than 100 presently, more than a 75 percent reduction!

CYRO Industries recently invited staff from ConnTAP's Site Visit Program to observe operations at its facility to see if further reductions could be realized there. ConnTAP's Dick Fetzer. a chemical engineer formerly with Loctite Corporation. and Don Nordstrom. a former plating specialist at Pratt& Whitney, toured CYRO's facility. They were very impressed with the company. s commitment to waste reduction and with its progress to date.

Currently. the largest waste stream generated at CYRO is a 250.000 lbs/yr waste stream of organic liquids. The waste consists mainly of toluene contaminated with unreacted monomers, volatile acrylic oligomers, and other materials from the batch polymer process. Presently this waste is used for energy recovery on-site in a permitted unit called the #4 boiler. It is a very clean fuel, having far fewer contaminants, such as sulfur, than would be present in the fuel it replaces. After September 1996, when CYRO's permit to substitute waste fuels expires, the waste will be managed off-site. The decision not to pursue a waste fuels permit for the boiler was based on several factors including various costs associated with the permit.

The ConnTAP team was asked to evaluate using pollution prevention techniques to reduce the volume of the organic. "mostly toluene" waste stream that had in the past been substituted for gas or fuel oil in the #4 boiler. Fetzer and Nordstrom were informed of recent trials that CYRO had undertaken using a wiped film heat exchanger, which showed that even more toluene could be recovered from the organic still bottoms as they thickened during evaporation of the more volatile light ends. Unfortunately, the high cost of a new wiped film heat exchanger could not be justified on the basis of the savings realized from recycling more toluene and the disposal of less still bottoms alone.

In an effort to identify another, more economical. option for the company, Fetzer and Nordstrom investigated whether membrane separation technology could be used effectively to filter the still bottoms, making them suitable for recycling. They found very few, if any, non-aqueous applications of membrane filtration of the type required by CYRO. Discussions with a number of vendors led Fetzer and Nordstrom to conclude that polymeric membranes. which comprise the majority of separation systems now used by industry, would be unsuitable for CYRO'S application. Other membrane separation systems, including layered over sintered metal membrane and inert carbon fiber technology were also investigated. All proved to be unsuitable.

In their report, the ConnTAP team found only one membrane separation system that seemed to hold any promise for CYRO's waste: ceramic membrane filters of a "crossflow" design. This technology seemed to offer the best chance of excluding the low molecular weight polymers, which CYRO cannot recycle, while allowing the toluene and unreacted monomers to permeate through the membrane. Fetzer and Nordstrom provided CYRO with a list of companies capable of providing separation systems using ceramic membranes. Most could test CYRO's waste stream for general feasibility. Were the tests to prove positive, the next step for the company would be to borrow or rent a small test unit and make a pilot run on a larger quantity of the toluene waste stream.

In light of CYRO'S successful trial with wiped film heat exchange technology, the ConnTAP team offered one other practical suggestion. They advised the company to consider sources of surplus industrial equipment. Fetzer and Nordstrom pointed out that some surplus equipment has never been used, which reduces the danger of process contamination and other problems. CYRO is following up on these recommendations.

New technology a major factor in ConnTAP library reorganization Information retrieval made easier, cataloging process streamlined

recent improvements to the libary were

considered, one thing was clear: the

ability to search the database and per-

form effective information retrieval

Improvements to ConnTAP's resource center have greatly enhanced access to information on pollution prevention and related environmental top-ConnTAP's resource center was an absolute necessity. houses videotapes, periodicals and a

library of over 1.100 technical publications, including textbooks, government reports. case studies and fact Bob Brown.

sheets ConnTAP's Technical Specialist. recently integrated library software and computer hardware, streamlining the ability to search. retrieve and catalogue the library's growing list of holdings.

Bob Brown and Barbara Barbieri discuss the features of ConnTAP's new library workstation.

Library databases generally contain separate records for each document. Each record contains fields for specific information such as the document title, publication date. and library shelf location. Records also contain searchable fields. Examples of search field entries might include the document abstract or a short list of "keywords.'* To locate documents on a specific subject, the user would query the database by entering keywords. Should a keyword match text contained in the search fields, the computer would display the document record. indicating a "hit."

The ability to effectively search library databases depends on the information stored in search fields. Imprecise or inaccurate search field entries can result in pertinent documents being overlooked and erroneous or unwanted documents being reported. In the past. ConnTAP, with its limited staff resources. found it impractical to key-in lengthy. detailed search field entries for its growing library collection. An inability to perform reliable keyword searches was the result. When After evaluating several library database software packages. ConnTAP selected DB/Textworks because of its data management capabilities, adaptability, ease of use, and powerful reporting features. Developed by Inmagic, Inc. of Woburn MA, DB/ Textworks is also widely used by pollution prevention groups in the New England region, allowing ConnTAP to readily exchange a wide range of technical information with other states.

DB/Textworks allows users to import information into document records from a variety of sources. including word processing files. ConnTAP hoped that this feature could allow staff to scan document abstracts, table of contents. or indexes and then insert the information into search fields. If successful. ConnTAP could transfer hundreds of keywords into searchfields using very little staff time.

Bob Brown explains. "We contacted a variety of sources but were unable to verify that anything of this nature had ever been done. We were also told that converting a scanned page of text into a word processing file required the use

of optical character recognition (OCR) software, and that OCR software is not always accurate in translating scanned text. Further research, however. convinced us that scanning text into the database was a viable concept

With funding assistance from U.S. EPA. ConnTAP purchased a computer (70 Mhz Pentium) and a flatbed scanner. With the new hardware and the DB/Textworks software, a trial run was performed. The system performed flawlessly. A four-page table of contents was scanned and converted into a word processing file. Errors in translation were flagged using spellcheck software. The word processing file was then imported into a search field in the already-created document record.

Hundreds of documents from ConnTAP's old dBase database were then imported into DB/Textworks. These document records were then modified, incorporating scanned information. Finally, new library acquisitions were added to the DB/ Textworks library database. In concert with these changes. ConnTAP reorganized the layout of library shelving and purged outdated materials.

Future plans call for converting other ConnTAP databases to DB/Textworks and for using the scanner in the layout of the ConnTAP Quarterly. In the meantime. ConnTAP's new library database is up and running.

> For questions about ConnTAP's library, or to request technical information, contact **Bob Brown at** (860) 241-0777, or email Bob at p2eline@aol.com.

ConnTAP Quarterly/Summer 1996

DEP inspector, former plater, talks about regulating his old industry

Lou Santos is an Air Pollution Control Engineer with the Connecticut Department of Environmental Protection (DEP). Most of Lou's time is spent inspecting industrial facilities to insure their compliance with state and federal air regula -

tions. Before joining the DEP. Lou worked for many years in the plating industry.

Lou. How long have you been with the DEP?

Lou Santos: I've been with the DEP for about three years. Before that. I worked as a plater at about four or five different shops.

and have worked with all processes - precious metals, hard chrome. nickel and electroless nickel.

How many companies do you visit in the course of a year?

LS: I visit about 200 to 250 companies a year. I'm only in the office one day a week. The rest of the time I'm on the road. I try to save one day a week as plater's day, when I go out and visit only plating companies.

Do you see pollution prevention making inroads among platers'?

LS: Yes. I do. Most shops seem to be moving towards closed loop operation. At my last plating shop, we were virtually closed-loop. We kept baths going for years. Saving bath and rinse water is one of the most important things that platers can do to cut down on pollution. It's very important to extend bath life. Good house-keeping is important, too. So are plumbing modifications, counter-current rinsing, the addition of more rinse tanks and measuring conductivity before adding water to the rinse baths.

Most of what you're saying about

pollution prevention applies to water issues, but you do enforcement for the Bureau of Air Management at the DEP. Can you discuss how platers can reduce their air emissions'?

LS: For starters, they can cover their tanks, run cooler baths and vent their



four or five different shops. DEP Engineer Lou Santos at the DEP's Elm Street I started in plating in 1976 offices in Hartford.

tanks using scrubbers.

So how are emissions currently calculated for platers'?

LS: It's not easy. With vapor degreasers you can use mass balance formulas. With plating baths the situation is more complicated because vou're dealing with water vapor. temperature and air flow rates. In Connecticut. we have Section 29 on the books, which includes three tables. We enforce Table 1 which includes nickel, chrome and many organics. Right now, chrome platers have to meet the MASC. which stands for Maximum Allowable Stack Concentration. We determine emissions using stack test data, or by calculating them using formulas and emission factors. Stack tests, however, are the only exact way to determine what the emissions actually are for plating systems,

Are changes planned'?

LS: Yes. Next year. on January 1st. the federal MACT (Maximum Achievable Control Technology) standard for hard chrome platers takes effect. The MACT for chrome establishes an emis-

sions threshold. set by the U.S. EPA. Until recently, 1 thought that if hard-chrome platers **could** meet the MACT. they would be within the MASC. Now, after calculating MACTs and MASCS for several different flow rates and property line distances. it seems that the MASC maybe more stringent than the MACT for certain cases.

So the MACT doesn't mean an end to equations and emission factors'?

LS: That's right, there will still be equations that have to be calculated and emission factors that the platers will have to deal with. The DEP can supply hard chrome platers with information and will review the new MACT standard with them.

Are companies aware of this'?

LS: Hard chrome platers should be, either through their trade associations, conferences, DEP outreach or word of mouth.

How difficult do you think it will be for companies to meet the MACT and where can they go for help?

LS: For some companies it'll be relatively easy, for others it won't. I recommend that platers use their trade groups and. believe it or not, the DEP. The DEP has changed a lot over the years. The DEP is really trying to reach out to industry with programs like the Title V Helpline.

Do you miss anything about plating? LS: I miss designing. retrofitting and building plating lines and systems. I also miss getting my hands dirty. Platers like to touch their plating baths. They like to smell the solutions. I really miss that.

For questions about
Title V and the new MACT
standard, call the CT DEP
Title V Helpline at
(800) 760-7036.

New case studies available from ConnTAP Reports show that small investments can go far

Two new technical reports recently have been made available to the public through ConnTAP. The reports. funded by ConnTAP Matching Challenge Grants. detail studies performed by two Connecticut manufacturing companies over the past year. The companies. National Chromium Company of Putnam and Bead Industries in Bridgeport. were awarded grants to research waste reduction technologies or techniques. Both reports contain valuable information on water conservation. waste reduction and the reduction of air emissions.

Closed-Loop Chromium Plating and Air Handling
System - A Case Study was prepared by National
Chromium Company of Putnam and The Pollution
Prevention Cooperative of West Hartford. Under the
1990 Clean Air Act Amendments. the EPA released
the Maximum Achievable Control Technology
(MACT) standards which set stringent emissions limits
for chrome electroplating. National Chromium has
closely followed the MACT regulations and preemptively installed closed-loop recycling of its chrome
plating solutions and an air handling system. The
modifications have been in place for over a year
without problems and the generation of chromium

rinsewaters and air emissions have decreased significantly. The case study describes the technical and financial aspects of the closed-loop project. It also provides "unitized" cost savings which can assist other metal finishers with evaluating the financial feasibility of closing their process loops.

Mixed Wastewater Reuse and Recycle Feasibility
Study was prepared by Bead Industries of Bridgeport
and Integrated Technologies of Danville, VT. The
report reviews the latest in a series of waste minimization projects undertaken by Bead. Through the grant
project, Bead discovered several water conservation
opportunities in its metal finishing department, including: recycling of acid rinsewater; closed-looping
copper and silver plating lines coupled with three-stage
countercurrent rinses; and the incorporation of a threestage countercurrent rinse into post-burnishing operations. Total water use at Bead is expected to drop by
82 percent after implementation of the simple changes
recommended in the report.

To obtain copies of these or other Matching Challenge Grant reports contact ConnTAP's Barbara Barbieri at (860) 241-0777.

ConnTAP's **Materials Exchange** seeks to match businesses that have surplus hazardous materials or usable hazardous by-products with businesses that can use the materials in their manufacturing processes. In this way, generators can avoid disposal costs, while receivers can find an inexpensive source of raw materials.

The following list is a sample of materials currently available through the exchange. For a complete listing, or to advertise an item with ConnTAP's **Materials Exchange**, contact Bob Brown at (860) 241-0777 or p2eline@aol.com.

BLAST MEDIA - plastic particles, for fine blasting or filler. Sample lab analysis. MSDS available. CHROMIC ACID - 10 oz./gallon Cr*o from chrome plating operation. Sample, lab analysis available.

A SSORTED PAINTS, LACQUERS. THINNERS - quantities vary. Call ConnTAP for inventory list. METHYL ALCOHOL - from parts cleaning operation. Very low suspended solids. MSDS available. COOLANT - for machining/drilling. Virgin material. 100% water soluble.

PHOSPHOROUS OXYCHLORIDE -virgin material. Sample. MSDS available.

SULFURIC ACID - 96% virgin material. Sample, lab analysis. MSDS available.

PLATING SOLUTIONS - various. all virgin material. Sample available.

Several companies have also contacted the **Materials Exchange** to express their interest in obtaining materials for reuse. The following items are typical.

SULFURIC ACID. TECHNICAL - 80-99%- pure. for use in batch treating, pH adjustment. ETHYLENE GLYCOL - pH 7.5-9.5, <5.0 ppm lead, to be recycled.

National Pollution Prevention Roundtable's Spring Conference EPA's Browner reaffirms support, ConnTAP's Lomasney in prominent role

In April. ConnTAP manager Rita Lomasney attended the Spring 1996 Conference of the National Pollution Prevention Roundtable (NPPR) in her role as Chair of the NPPR's Board of Directors. The NPPR is the country's largest association of state, local, and tribal government programs devoted to supporting efforts to reduce or eliminate pollution at its source. Rita has been a member of the NPPR's Board for several years. She will step down as Chair when her term expires this coming September.

The conference was in Washington D.C. and attracted over 560 participants from NPPR member organizations, non-profit groups, trade associations, federal agencies, universities and private industry. At the opening session, a diverse and influential panel of speakers addressed



Rita Lomasney, Chair of the NPPR Board and ConnTAP Manager, introduces EPA Administrator Carol Browner at the conference's openin g session.

crucial issues facing the environment today. U.S. EPA Administrator Carol Browner, in her keynote address. spoke of the necessity of maintaining pollution prevention as a major component in the national strategy to achieve environmental protection. Michael McCabe, EPA Region 111 Administrator. Fred Krupp, the Executive Director of the Environmental Defense Fund. Paul Tebo. Vice President for Safety. Health and Environment at DuPont and Rita Lomasney also spoke. President Clinton sent his

greetings and commendations in a written message.

The remainder of the three-day conference featured concurrent sessions on a wide range of topics including:

- integrating pollution prevention into regulations:
- environmental policy issues:
- · education and training;
- technical presentations;
- evaluation and measurement: and
- updates on EPA programs.

A number of topics and issues not addressed at previous NPPR conferences were added this year, including:

- pollution prevention and the 1S0 14000;
- · chemical use/materials accounting data;
- agricultural pollution prevention initiatives;
- international cleaner production programs;
- voluntary approaches to pollution prevention; andenergy and pollution prevention linkages.

As the end of her term approaches, Rita recently reflected on things she has learned. the people she's met, and the new perspective she has gained over the last year. "Serving as the Chair has been a stimulating and rewarding experience. I appreciate the opportunities I have had to meet with and discuss issues with leaders and influential thinkers from industry and government. both here and internationally. I hope that I can use this experience to expand ConnTAP's outreach to local industry and to sharpen the message of how important pollution prevention is."

To learn more about the NPPR, or to be put on the conference mailing list, contact the NPPR office in Washington, D.C. at (202) 466-7272.

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